

**USDA-APHIS-WILDLIFE SERVICES
BISMARCK, NORTH DAKOTA**

MONITORING REPORT and AMENDMENT TO THE ENVIRONMENTAL ASSESSMENT

**“WILDLIFE DAMAGE MANAGEMENT in NORTH DAKOTA for the PROTECTION of
LIVESTOCK, PUBLIC HEALTH and SAFETY, PROPERTY, and WILDLIFE”**

INTRODUCTION

The US Department of Agriculture (USDA)- Animal and Plant Health Inspection Service (APHIS)- Wildlife Services (WS) completed a *Wildlife Damage Management in North Dakota for the Protection of Livestock, Public Health and Safety, Property, and Wildlife* Environmental Assessment (EA) in 1996. The EA analyzed predator damage management for the protection of livestock, property, and wildlife, and to reduce the predator threat to public health and safety. The Decision/FONSI was signed March 20, 1997 and: 1) selected the Integrated Wildlife Damage Management for Multiple Resources and Land Classes (Proposed Alternative) and 2) articulated that WS will coordinate with the North Dakota Department of Game and Fish (NDGF) to monitor the WS take of predators to insure species viability; analysis in the EA focused on six predators: badger, coyote, mink, red fox, raccoon, and striped skunk.

A monitoring report has been completed each year since signing of the Decision/FONSI which concluded that a revision of the EA was not necessary and that the original Decision remained valid since the affected environment and impacts remained essentially unchanged from those analyzed in the EA. Copies of the EA, Decision/FONSI and monitoring report are available from the North Dakota WS State Office, USDA, APHIS, 2110 Miriam Circle, Bismarck, North Dakota 58501-2502.

The purpose of this report is to: 1) document the review of information that has become available since the development of the last monitoring report, 2) determine if the Decision/FONSI made in conjunction with this document is still appropriate, and 3) take appropriate action if the affected environment or impacts have significantly changed from the data analyzed in the EA by amending the original EA, prepare a new EA, or Decision/FONSI with an amendment to the EA, depending on the magnitude of change. This review uses the most currently available information which in most cases is 2002 data.

PROGRAM RESULTS ANALYSIS - FY02

OBJECTIVES

In the 1997 EA, ten objectives were established by WS for the North Dakota predator damage management program and analyzed in the original EA. The objectives and statewide accomplishments toward meeting these in FY02 are detailed below.

Objective A-1: *Respond to requests for assistance with the appropriate action as determined by North Dakota WS personnel, applying the ADC Decision Model¹.*

In FY02, WS conducted either technical assistance or direct operational programs after receiving a request for assistance with predator conflicts. Technical assistance, which included the distribution of information to assist landowners/livestock owners with the reduction or prevention of further damage, totaled 492 projects (Table 1). WS

¹The WS Decision Model is a cognitive process used by WS personnel to determine the best methods to address a given wildlife damage management problem (Figure 3-1 in the original EA).

conducted direct operational programs to mitigate 1,103 occurrences of predator conflicts: coyote (835), red fox (16), badger (30), raccoon (101), striped skunk (115), and mink (6). These conflicts affected livestock owners, human safety, and other resources; and resulted in \$135,550 in associated losses².

Objective A-2: *Hold lamb losses due to predation to less than 3% per year for producers who have signed WS agreements.*

According to the North Dakota Agricultural Statistical Service (NDASS) (2003), the total sheep and lamb inventory for 2002 totaled 145,000 head. The 2002 lamb crop was 115,000 head, 5% higher than the previous year.

During FY02, WS operational activities protected 54,050 lambs, 47% of the statewide lamb crop. Documented predation on lambs protected by WS in FY02 totaled 106 head (Management Information System [MIS] unpublished data). These losses impacted 0.20% of the lamb crop protected by WS during FY02.

Objective A-3: *Hold adult sheep losses due to predation to less than 2% per year for producers who have signed WS agreements.*

The total adult sheep inventory in North Dakota during 2002 was 105,000 (NDASS 2003). During FY02, WS operational activities protected 23,625 adult sheep, 22.5% of the statewide adult sheep inventory. Documented predation on adult sheep protected by WS in FY02 totaled 38 head (MIS unpublished data). These losses impacted 0.16 % of the adult sheep protected by WS during FY02.

Objective A-4: *Hold calf loss due to predation to less than 1% per year for producers who have signed WS agreements.*

The NDASS (2003) reported a North Dakota cattle and calf inventory of 1 million head for 2002. During FY02, WS operational activities protected 60,000 calves, or 6% of the statewide inventory. Documented losses of calves protected by WS in FY02 totaled 168 (MIS unpublished data). These losses impacted 0.28% of all calves protected by WS during FY02.

Objective A-5: *Provide requesting cooperators and cooperating Federal State, Tribal, and local agencies with information on non-lethal management techniques proven to be effective for reducing predation.*

Discussions on non-lethal management strategies were held with producers during annual meetings of the North Dakota Stockmen's Association and the North Dakota Lamb and Wool Producers Association. Additionally, information packets on non-lethal protection of livestock were distributed upon request as new agreements were signed with livestock producers. During FY02, WS responded to 492 requests for assistance with predator damage management (Table 1) and all requesting cooperators and cooperating agencies were provided information detailing non-lethal protection of livestock from predators.

Objective A-6: *Maintain the lethal take of non-target animals by North Dakota WS personnel during damage management to less than 3% of the total animals taken.*

A total of 2,695 target and non-target animals were killed by WS personnel during predator damage management in FY02

Table 1. Technical Assistance projects conducted in FY02.

Species	# of Projects	# of Participants
Badger	19	21
Coyote	361	433
Mink	2	6
Raccoon	100	134
Red Fox	10	12

² Losses from human safety threats are not included because of the difficulty in placing values on such incidents.

(Table 2 and 3). Of these, 23 were non-target animals. Non-target lethal take represents less than 1% of the total take by WS. Thus, the North Dakota WS program administration is selective for the target species.

Objective A-7: *Continue to monitor the implementation of livestock producer non-lethal techniques.*

WS personnel reported non-lethal methods implemented by producers during the 1996 season. North Dakota WS files (unpubl. data) show that 100% of North Dakota sheep and lamb producers, where WS conducts activities, practice at least one non-lethal measure and 91% of the sheep and lamb producers use three or more non-lethal methods. Non-lethal options for cattle producers are more limited, yet many producers practice improved husbandry at calving time, in part, to reduce predation. During FY99, NASS (1999) reported that 82.5% of WS cooperating sheep and lamb producers in North Dakota practiced at least one non-lethal measure with expenditures of \$124,040 to implement non-lethal methods.

Objective B-1: *Respond to requests from North Dakota Game & Fish, US Fish & Wildlife Service and Tribes for protection of designated wildlife, dependent on funding and workforce.*

WS did not receive any requests for assistance from other resource management agencies or Tribes in FY02. However, the WS program would have provided assistance if requested.

Objective B-2: *Involve the NDGF, USFWS or Tribes in wildlife damage management planning to consider specific wildlife to be protected and public health and safety when designating a wildlife damage management program.*

The current North Dakota WS program involves the NDGF, U.S. Fish and Wildlife Service (USFWS), USDA Forest Service (Forest Service), Bureau of Land Management (BLM) and Tribes, as appropriate, in the design of WS wildlife damage management programs and the implementation of mitigation measures to preclude adverse impacts to target and non-target species and humans.

Objective C-1: *Respond to cooperator requests for public health and safety protection from predators using the ADC Decision Model (Slate et al. 1992).*

WS, the North Dakota Department of Health, and the North Dakota Department of Agriculture continued their cooperative efforts in response to reports of rabies incidents throughout the state. The primary carriers of rabies are skunks. During FY02, WS responded to 97 incidents of public health and safety concerns from various predators.

Table 2. North Dakota WS lethal take of target species, FY02.

Species	NDGF Est. Pop. ¹	WS Take ²	Other Take ^{1,3}	WS Take (% pop.)	Total Take (% pop.)
Coyote	26,923	2,329	4,850	8.6	26.7
Red Fox	103,987	74	1,095	0.07	1.1
Raccoon	97,207	192	3,829	0.2	4.1
Badger	4,327	20	389	0.5	9.5
Striped Skunk	506,659	75	309	0.01	0.08
Mink	28,959	5	458	0.02	1.6
Total Take		2,695	4,869		

¹ Most currently available information

Table 3. WS lethal take of non-target species, FY02.

Species	# Taken
Badger	2
Jack Rabbit	4
Raccoon	6
Red Fox	7
Striped Skunk	1
White-tailed Deer	2
Wild Turkey	1

ISSUES ANALYZED IN DETAIL IN THE ORIGINAL EA

Concern for the North Dakota ADC kill of predators to cause predator population declines, when added to other mortality.

A primary issue addressed in the 1997 EA was the impact of WS predator removal on the viability of target and non-target wildlife populations. Coyote predation continues to be the most important predator problem in the State, and more coyotes were removed than any other species (Table 2). A NDGF coyote population model determined that about 54% of the North Dakota coyote population could be removed annually and still maintain viable and healthy populations (S. Allen, NDGF, unpubl data). Allowable annual harvests of red fox have been estimated to be 50%-70% of the total population (Pils et al. 1981, USDA 1997). Allowable annual harvest levels for raccoons were established at 49% of the total population (USDA 1997), similar to the findings of Clark et al. (1989). Badger populations can sustain an annual harvest rate of 30-40% (Boddicker 1980). Based on this information, WS' impact on the health and viability of predator populations as analyzed in the EA, even with possible "Other Take" under-reporting, had a low cumulative impact on the health and viability of predator populations as analyzed in the EA and is not affecting predator populations in North Dakota (J. Gerads, Furbearer Biologist, NDGF, pers. comm. 2002).

Concern for the North Dakota WS kill of non-target wildlife and T&E species incidental to North Dakota WS predator damage management.

WS Policy (WS Directive 2.450) states "Nontarget animals captured would be released if it is determined that they are physically able to survive." In FY02, North Dakota WS' nontarget kill was badgers (2), jack rabbit (4), raccoon (6), red fox (7), striped skunk (1), white-tailed deer (2), and wild turkey (1) (Table 3). No non-target animals were taken by aerial hunting, calling, shooting, denning or through the use of dogs. In addition, of the above animals listed as nontarget species, most are classified as either big game animals (North Dakota Century Code [NDCC] 20.1-01-02[4]), furbearers (NDCC) 20.1-01-02[12]), or game birds (NDCC) 20.1-01-02[13]). All wildlife species classified as a furbearer or game species are regulated by NDGF and have take restrictions, (i.e., method and time of take), however, all furbearers except bobcat may be taken in unrestricted numbers. North Dakota WS will continue to coordinate operational activities with the NDGF to insure no adverse affects on target or nontarget species. In addition, WS policy would continue to minimize nontarget catches whenever possible.

T&E Species Concerns

No threatened or endangered species were captured or killed by WS in North Dakota in FY02. However, the potential does exist for North Dakota WS to capture a gray wolf as addressed in the USFWS Section 7, Biological Opinion (USFWS 1992) on the ADC Program and the informal Section 7 Consultation with the USFWS on the North Dakota WS program (Appendix C of original EA).

Gray Wolf - No wolf depredation complaints were received by WS during FY02 and no wolves were captured or killed by North Dakota WS in FY02.

On April 1, 2003, the USFWS released their final rule for the reclassification of the gray wolf in the conterminous U.S. As a result of this final rule, the gray wolf is now reclassified from "endangered" to "threatened" in two distinct population segments (DPS), the Western DPS (50 CFR 17.40(n)) and the Eastern DPS (50 CFR 17.40(o)). North Dakota is included in the Eastern DPS, therefore wolves within the state are now classified as threatened. Section 4(d) of the Endangered Species Act allows the USFWS to modify protections for threatened species in order to better address the unique conservation needs of the particular species. Mitigation of documented wolf predation on livestock is included within the provisions of Section 4(d); whereby employees of USFWS, state or tribal natural resource management agencies, or their agents can remove wolves responsible for livestock depredation.

Canadian Lynx - The lynx was officially listed as threatened under the Endangered Species Act since the EA was

completed; the listing became effective April 24, 2000 (USDI 2000). Within the APHIS-WS Western Region includes two distinct lynx habitat regions exist: the Northern Rocky Mountains/Cascades and the Southern Rocky. North Dakota is not included in lynx range and does not contain any recovery zones.

Concerns for the potential use of each predator damage management method.

All methods are used and would continue to be used as selectively and humanely as possible, in conformance with the WS Decision Model (Slate et al. 1992) and WS Program policies and directives. North Dakota WS personnel are trained in the use of each method and are certified as pesticide applicators by the North Dakota State University Extension Service. Some methods may be more or less effective or applicable depending on weather conditions, time of year, biological considerations, economic considerations, legal and administrative restrictions, or other factors. Because these factors may at times preclude use of certain methods, it is important to maintain the widest possible selection of damage management tools to most effectively resolve predator damage problems.

Concerns over the Selectivity, Relative Cost, and Effectiveness of each Predator Damage Management Method.

Chapter 3 of the 1997 EA included discussion about the relative effectiveness and selectivity of the various methods used by North Dakota WS and that discussion will not be repeated here. Under the current program, all methods are used as selectively and effectively as possible, in conformance with the WS Decision Model (Slate et al. 1992) and WS Program Directives. The selectivity of each method is based, in part, on the application of the method and the skill of the personnel, and the direction provided by WS Directives and policies. Effectiveness of the various methods varies widely depending on local circumstances at the time of application.

Several of the methods employed under the current program are typically 100% selective for target species. These methods include aerial hunting, shooting, calling and shooting, and denning. While the methods discussed above are typically 100% selective in capturing only the target species, other methods such as leghold traps, M44s, and snares are somewhat less selective (Table 4). However, nontarget species can also be released from leg-hold traps without significant injuries.

North Dakota WS uses leg-hold traps with offset jaws to reduce injuries and North Dakota WS' use of pan-tension devices makes use of leg-hold

Table 4. Selectivity of Leg-hold Traps, Snares and M-44s used by North Dakota WS Program During FY02.

Take	Traps	Snares ^{1,2}	M-44s
<u>Targets</u>			
Badgers	20	0	n/a
Coyotes	196	402	640
Raccoon	43	67	n/a
Red Fox	8	27	36
Total	267	496	676
<u>Nontargets</u>			
Badger	2	0	0
Jack Rabbit	0	4	0
Raccoon	0	5	0
Red Fox	1	3	3
Striped Skunk	1	0	0
White-tailed			
Deer	0	2	0
Wild Turkey	0	1	0
Total	4	15	3

traps more selective³ (WS Directive 2.450). In addition, North Dakota WS personnel often try to reduce the need for setting traps or snares by trying to first remove problem animals by calling and shooting. If calling and shooting is unsuccessful or not feasible, then capture equipment would be placed or aerial hunting used to resolve the problem.

As used by North Dakota WS personnel, snares are slightly less selective for target species than leg-hold traps. Traps are selective as used by North Dakota WS personnel because of their skill, mitigation measures, and the WS trapping policy restrictions (WS Directive 2.450). The selectivity of snares is largely a function of how and where they are set. Breakaway snare locks are used to release hoofed mammals which are accidentally caught.

Use of decoy or trapline dogs can be highly selective, not only for the offending species but for offending individuals. Decoy and trapline dogs are relatively inexpensive to use in North Dakota, and they can be utilized several ways, including denning, decoying, and trailing which increases predator removal effectiveness.

Denning is very selective because positive identification of the species is possible. Denning, and the act of finding the den, is time consuming and can be relatively expensive compared to other methods.

Aerial hunting, calling and shooting, shooting, dogs, and denning by skilled North Dakota WS personnel are extremely selective methods: no nontarget animals were taken by these methods in FY02 while 42 % of the target animals were taken by these 5 methods combined.

Use of livestock guarding dogs by sheep producers has proven effective in preventing or reducing some predation losses (Green and Woodruff 1996), and use of guard dogs is generally perceived as a selective form of non-lethal damage management. But use of guard dogs may also involve deaths of target and nontarget animals. Timm and Schmidt (1989) documented that guard dogs in their study regularly killed deer fawns, and anecdotal evidence from North Dakota WS personnel and livestock producers suggests that guard dogs sometimes kill coyote and red fox pups as well as deer fawns.

Llamas have also been advocated as effective livestock guarding animals (Franklin and Powell 1994), but some degree of hazard to livestock may exist from the use of llamas for this purpose. Llamas are sometimes carriers of paratuberculosis (Johne's disease) which may be transmissible to native ungulates or domestic livestock (Wildlife Management Institute 1995). This disease involves a chronic wasting of the intestinal tract and associated lymphoid tissues, and there is no known cure.

Concerns over the effects of North Dakota WS Predator Damage Management on Public Health and Safety.

Effects on public health and safety include potential benefits caused by North Dakota WS fostering a safer environment and the potential negative effects that might result from the exposure of the public to predator damage management methods. The two chemical methods used in predator damage management (sodium cyanide in the M-44 and sodium nitrate in the gas cartridge) posed possible risks, but the risks associated with these methods are mitigated through specific direction provided by WS program policies. The potential benefits from the North Dakota WS Program include reduced disease threats to humans and domestic pets (e.g., rabies), and monitoring of diseases such as mange.

No conflicts with the public or domestic pets were reported during FY 02.

Concerns over the Economic Effects of Predator Damage Management.

Economic impacts are monetary benefits or liabilities that the current program would have on livestock and wildlife losses,

³ Pan-tension devices increase the amount of weight required to spring the trap, and are used successfully to significantly reduce the incidence of capturing smaller nontarget species (Turkowski et al. 1984, Phillips and Gruver 1996).

public health and safety, and on property⁴. A complete review of the ADC Program's Economic Impact Assessment may be found in USDA (1997:Chapter 4).

Benefits of the current program in North Dakota can be shown by examining predation rates to lambs, sheep, and calves. Documented lamb, sheep, and calf losses from predators in North Dakota in FY02 averaged 0.20%, 0.16%, and 0.28% on properties where predator damage management by WS was undertaken. These losses are well below stated objectives of the damage abatement program (see Objectives A-2 through A-4). The low level of predator loss is one indication that the current North Dakota WS predator damage abatement program is economically effective. However, other measures of economic efficacy are the level of predation prevented by WS predator damage management program and the cost:benefit ratios of the program.

Bodenchuck et al. (2002) summarized the impacts of predator-induced losses in the absence of damage abatement programs: average annual losses of lambs equal 18%, adult sheep average 6% loss annually, and calf losses average 3% annually. Applying these values to the number of animals protected by the WS predator damage management program provides an estimate of the potential loss of lambs, adult sheep, and calves to predation. Comparisons between potential loss and actual loss of these classes of livestock provide insight into the amount of predation prevented as a result of WS predator damage management program. Applying market values to the numbers of animals saved helps measure the economic benefits of the WS predator damage management program (Table 5).

Table 5. Savings attributed to the North Dakota WS predator damage management program, FY02.

Livestock Class & Market Value (\$) ¹	# Animals of Protected ²	Potential Loss to Predation ³	# Documented Losses to Predation ²	# Livestock Saved ⁴	Market Value Saved (\$) ⁵
Lambs (119)	54,050	9,729	106	9,623	1,145,137
Adult Sheep (47)	23,625	1,418	38	1,380	64,860
Calves (435)	60,000	1,800	168	1,632	709,920
Totals	137,675	12,947	312	12,635	1,919,917

¹ ND State Univ. Extension Service

² MIS unpublished data

³ Number of animals protected multiplied by the average percent loss of livestock to predation in the absence of a damage abatement program: lambs (18%), adult sheep (6%), calves (3%) from (Bodenchuck et al. 2002)

⁴ Difference between potential loss and documented loss

⁵ Number of animals saved multiplied by the market value

The North Dakota WS predator damage management program prevented about \$1.9 million in predator losses to livestock on those properties where damage management action were taken during FY02 (Table 5). These savings not only benefitted those livestock producers, but other segments of society as well. Recognizing the economic benefits of predation management extend beyond properties where WS provides assistance, Bodenchuck et al. (2002) applied a 3x multiplier effect to the direct savings which resulted from the prevention of livestock losses to predators. Using that same multiplier raises the economic benefits of the WS predator damage management program to segments of society not directly involved with livestock production in North Dakota to \$5.7 million. The gross total benefit (sum of direct and indirect benefits) of predator damage management in North Dakota was \$7.6 million.

⁴ Costs and benefits associated with implementing IWDM would be considered but may be a secondary concern in relation to overriding legal and environmental considerations and are not the primary basis for the decision(s) to be made.

The North Dakota WS program is cooperatively funded through a combination of federal and state funding. During FY02, a total of \$299,144 (\$164,696 federal:\$134,418 state) was used to protect livestock resources from predation. The cost:benefit ratios of WS predator damage management program ranged from 1:6 (protection of livestock resources on properties where WS worked) to 1:26 (when including total gross benefits provided to other segments of society). These cost:benefit calculations provide further evidence of the positive economic effects of the North Dakota WS predator damage management program.

Coordination with Federal and State Agencies

Wildlife damage management methods were used consistent with BLM and National Forest System (Forest Service) land use plans when and where it was determined necessary by WS personnel to resolve or prevent problems. Annual work plans were established with both agencies. M-44s and gas cartridges were used according to the label and use-restrictions, and M-44s were removed during bird hunting season.

NEW ISSUES NOT ANALYZED IN THE ORIGINAL EA

Aerial Hunting Risks

Several environmental and/or animal protection organizations have expressed concern to the BLM about the effects of WS' low level flights on non-target wildlife, public land and users, and the environment (i.e., fires and fuel spills). Aircraft play an important role in the management of various wildlife species. Resource management agencies rely on low flying aircraft to monitor the population status of many types of animals including large mammals (Lancia et al. 2000), birds of prey (Fuller and Mosher, 1987), waterfowl (Bellrose, 1976), and colonial waterbirds (Speich 1986). Low-level flights are also required when aircraft are used to track animal movements by radio telemetry (Gilmer et al. 1981, Samuel and Fuller 1994). The following analysis of WS predator damage management program in North Dakota during FY02 addresses those concerns.

Aerial hunting is an important component of WS integrated predator damage management program in North Dakota. During FY02, a total of 292 hours of fixed-wing hunting were expended by WS with 6.5 hours spent flying Forest Service lands. WS did not conduct aerial hunting operations on BLM lands during FY02. As described in the EA, WS predator damage management activities are only conducted on those areas where the landowner, lessee, or the land management agency had provided written approval. WS conducted aerial hunting on less than 3% of the total land area of North Dakota. WS aerial hunted on 18,933 acres of Forest Service lands in North Dakota (0.03% of the state's total land base). Put in perspective of time and space, aerial hunting represented 1 minute of low-level flight per 10 mi² statewide and 1.3 minutes of low-level flight per 10 mi² on Forest Service lands during FY02.

A number of studies have looked at responses of various wildlife species to aircraft overflights. USDI (1995) review of the effects of aircraft overflights on wildlife suggests that adverse impacts could occur to certain species. Some species will frequently or at least occasionally show adverse responses to even minor overflight occurrences. In general though, it appears that the more serious potential impacts occur when overflights are *chronic* (i.e., they occur daily or more often over long periods of time). Chronic exposure situations generally involve areas near commercial airports and military flight training facilities. WS aerial hunting operations rarely occur in the same areas daily and, as previously noted, little time is actually spent flying over those particular areas.

Examples of species or species groups that have been studied with regard to the issue of aircraft-generated disturbance and WS determination of potential impacts from aerial hunting overflights are as follows:

- Colonial Waterbirds. Kushlan (1979) reported that low level (390 feet followed by a second flight at 200 feet) overflights of 2-3 minutes in duration by a fixed-wing airplane and a helicopter produced no "drastic" disturbance of tree-nesting colonial waterbirds, and in 90% of the observations, the individual birds either showed no reaction or merely looked up. WS aircraft are unlikely to be flown over such species in North Dakota because aerial hunting occurs in upland areas, primarily away from any riparian areas. Even if an overflight of a nesting colony occurred, it is apparent that little or no disturbance would result.

- Greater Snow Geese. Belanger and Bedard (1989, 1990) observed responses of greater snow geese (*Chen caerulescens atlantica*) to man-induced disturbance on a sanctuary area and estimated the energetic cost of such disturbance. They observed that disturbance rates exceeding two per hour reduced goose use of the sanctuary by 50% the following day. They also observed that about 40% of the disturbances caused interruptions in feeding that would require an estimated 32% increase in nighttime feeding to compensate for the energy lost. They concluded that overflights of sanctuary areas should be strictly regulated to avoid adverse impacts. WS aerial hunting flights rarely, if ever, occur over wetland areas and would not involve chronic or repeated flights over such areas. Thus, disturbance of migrating snow geese or any other waterfowl should be minimal to nonexistent.
- Mule Deer. Krausman et al. (1986) reported that only three of 70 observed responses of mule deer (*Odocoileus hemionus*) to small fixed-wing aircraft overflights at 150 to 500 feet above ground resulted in the deer changing habitats. The authors believed that the deer may have been accustomed to overflights because the study area was near an interstate highway which was followed frequently by aircraft. Mule deer are frequently seen from WS aircraft and are sometimes temporarily disturbed as evidenced by their running and avoidance behavior. However, it appears that adverse effects from this type of disturbance are minimal.
- Mountain Sheep. Krausman and Hervert (1983) reported that, of 32 observations of the response of mountain sheep (*Ovis canadensis*) to low-level flights by small fixed-wing aircraft, 60% resulted in no disturbance, 81% in no or "slight" disturbance, and 19% in "great" disturbance. The authors concluded that flights less than 150 feet above ground can cause mountain sheep to leave an area. The small population of mountain sheep in North Dakota inhabit an area characterized by rugged topography that is typically not suited for aerial hunting from a fixed-wing aircraft. The North Dakota WS program does not utilize helicopters for aerial hunting, therefore the use of fixed-winged aircraft will have minimal or no impact to mountain sheep.
- Bison. Fancy (1982) reported that only two of 59 bison (*Bison bison*) groups showed any visible reaction to small fixed-winged aircraft flying at 200-500 feet above ground. The study suggests that bison are relatively tolerant of aircraft overflights. The only populations of free-ranging bison in North Dakota are located within the boundaries of Theodore Roosevelt National Park, an area where WS does not conduct aerial hunting.
- Raptors. Andersen et al. (1989) conducted low-level helicopter overflights directly at 35 red-tailed hawk (*Buteo jamaicensis*) nests and concluded their observations supported the hypothesis that red-tailed hawks habituate to low level flights during the nesting period. Their results also showed similar nesting success between hawks subjected to such overflights and those that were not. White and Thurow (1985) did not evaluate the effects of aircraft overflights, but showed that ferruginous hawks (*Buteo regalis*) are sensitive to certain types of ground-based human disturbance to the point that reproductive success may be adversely affected. However, military jets that flew low over the study area during training exercises did not appear to bother the hawks, and neither were they alarmed when the researchers flew within 100 feet in a small fixed-wing aircraft (White and Thurow 1985). White and Sherrod (1973) suggested that disturbance of raptors by aerial surveys with helicopters may be less than that caused by approaching nests on foot. Ellis (1981) reported that five species of hawks, two falcons, and golden eagles were "incredibly tolerant" of overflights by military fighter jets, and observed that, although birds frequently exhibited alarm, negative responses were brief and never limiting to productivity. These studies indicate that overflights by WS aircraft should have no significant adverse impacts on nesting raptor populations.

The following information was obtained from Mr. Norm Wiemeyer, Chief, Denver Field Office of the National Transportation Safety Board (NTSB), the agency that investigates aviation accidents:

- Major Ground or Forest Fires: Mr. Wiemeyer stated he had no recollection of any major fires caused by government aircraft since he has been in his position beginning in 1987.

- Fuel and Oil Spills and Environmental Hazard from Aviation Accidents: The NTSB stated that aviation fuel is extremely volatile and will evaporate within a few hours or less to the point that even its odor cannot be detected (N. Wiemeyer, NTSB, 2000 pers. comm). The quantities involved in WS' aircraft accidents are small, 36 gallon maximum in a Supercub, the types of aircraft (2) flown by the North Dakota Wildlife Services program). In some cases, not all of the fuel is spilled. Thus, there should be little environmental hazard from unignited fuel spills.
- Oil and Other Fluid Spills: For privately owned aircraft, the aircraft owner or his/her insurance company is responsible for cleanup of spilled oils and other fluids if required by the owner or manager of the property on which the accident occurred. In the case of BLM, Forest Service, and National Park Service lands, the land managing agency generally requires soil to be decontaminated or removed and properly disposed. With the size of aircraft used by WS, the quantities of oil (i.e., 6-8 quarts maximum for reciprocating (piston) engines) capable of being spilled in any accident are small and insignificant with respect to the potential for environmental damage. Aircraft used by WS are single engine models, so the greatest potential amount of oil that could be spilled in one accident would be about 8 quarts.
- Petroleum products biodegrade through volatilization and bacterial action, particularly when exposed to oxygen (EPA 2000). Thus, small quantity oil spills on surface soils can be expected to biodegrade readily. Even in subsurface contamination situations involving underground storage facilities which would generally be expected to involve larger quantities than would ever be involved in a small aircraft accident, EPA guidelines provide for "natural attenuation" or volatilization and biodegradation in some situations to mitigate environmental hazards (EPA 2000). Thus, even where oil spills in small aircraft accidents are not cleaned up, the oil does not persist in the environment or persists in such small quantities that there is no problem. Also, WS' accidents generally would occur in remote areas away from human habitation and drinking water supplies. Thus, the risk to drinking water appears to be exceedingly low or nonexistent.

An informal polling of WS' State Directors in WS' Western Region affirms that no major ground fires have resulted from WS' aviation accidents. Also, the North Dakota WS program has not experienced any aircraft accidents. For these reasons, the risk of ground fires or fuel/oil pollution from aviation accidents is considered low. In addition, based on the history and experience of the program in aircraft accidents, it appears the risk of significant environmental damage from such accidents is exceedingly low.

Based on the above information and analysis, it is reasonable to conclude that WS' aerial hunting should not cause any significant adverse impacts to wildlife populations or the environment.

SUMMARY

Based on a review of information available since the completion of the 1997 EA and subsequent monitoring reports there appears to be no indications that North Dakota WS predator damage management is having adverse impacts on wildlife populations or the quality of the human environment. The analysis in the original EA and monitoring reports failed to identify any cumulative impacts nor are any significant impacts to the human environment from the current predator damage management program conducted by the North Dakota WS program. The area (acres) that North Dakota WS conducts its annual work activities continues to be a low proportion (about 5%) of the total land area of North Dakota. The effects to predator and nontarget populations that North Dakota WS targets during predator damage management are low and do not have long-term adverse impact on any species, nor are there any adverse affects to human health and safety from WS actions.

FINDING OF NO SIGNIFICANT IMPACT

The analysis in the 1997 EA and amendment indicate that there will not be a significant impact, individually or cumulatively on the quality of the human environment as a result of this proposed action. I agree with this conclusion and therefore find that an EIS need not be prepared. This determination is based on the following factors:

1. Predator damage management, as conducted by WS in North Dakota, is not regional or national in scope.

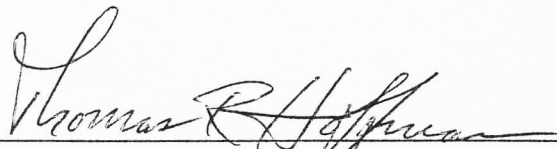
2. The proposed action would pose minimal risk to public health and safety.
3. There are no unique characteristics such as park lands, prime farm lands, wetlands, wild and scenic areas, or ecologically critical areas that would be significantly affected.
4. The effects on the quality of the human environment are not highly controversial. Although there is some opposition to predator control, this action is not highly controversial in terms of size, nature, or effect.
5. Based on the analysis documented in the 1997 EA and this amendment, and the accompanying administrative file, the effects of the proposed predator damage management program on the human environment would not be significant. The effects of the proposed activities are not highly uncertain and do not involve unique or unknown risks.
6. The proposed action would not establish a precedent for any future action with significant effects.
7. No significant cumulative effects were identified through this assessment. The number of animals taken by WS, when added to the total known other take of all species, falls well within allowable harvest levels.
8. The proposed activities would not affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places, nor would they likely cause any loss or destruction of significant scientific, cultural, or historic resources.
9. A Section 7 consultation with the USFWS confirmed that the proposed action would not likely adversely affect any T&E species.
10. The proposed action would be in compliance with all Federal, State, and local laws imposed for the protection of the environment.

DECISION AND RATIONALE, AND FINDING OF NO SIGNIFICANT IMPACT

Based on a review of information available since the completion of the 1997 EA there continues to be no indications that North Dakota WS predator damage management is having adverse impacts on wildlife populations or the quality of the human environment. The Decision made in conjunction with the 1997 EA has also been reviewed and determined that the current analysis is still appropriate. In addition, analysis conducted for this report validate that no significant impacts to the quality of the human environment have occurred from the proposed action. Therefore, the analyses in the EA and Decision/FONSI remains valid and a new EA is not warranted.

I have carefully reviewed the EA and Monitoring Reports and believe that the issues identified in the EA and results of the Monitoring Reports are best addressed by continuing Alternative 3 (Integrated Wildlife Damage Management for Multiple Resources and Land Classes - Proposed Alternative). Alternative 3 provided the best effectiveness and selectivity of methods and did not adversely impact the low level of risk to the public, pets, and T&E species. WS will continue to use the currently authorized predator damage management methods in compliance with applicable mitigation measures in North Dakota where WS has been requested to provide assistance since the completion of the Wildlife Damage Management in North Dakota for the Protection of Livestock, Public Health and Safety, Property, and Wildlife .

For additional information or questions regarding this Decision/FONSI, please contact the North Dakota Wildlife Services State Office, 2110 Miriam Circle, Suite A, Bismarck, ND 58501-2502, telephone (701) 250-4405.



for Michael Worthen, Western Regional Director
APHIS-Wildlife Services

6/25/03
Date

Literature Cited:

- Andersen, D.E., O.J. Rongstad, and W.R. Mytton. 1989. Response of nesting red-tailed hawks to helicopter overflights. *Condor* 91:296-299.
- Belanger, L. and J. Bedard. 1989. Responses of staging greater snow geese to human disturbance. *J. Wildl. Manage.* 53:713-719.
- Belanger, L. and J. Bedard. 1990. Energetic cost of man-induced disturbance to staging snow geese. *J. Wildl. Manage.* 54:36-41.
- Bellrose, F.C. 1976. Ducks, geese, and swans of North America. Stackpole Books, Harrisburg, PA. 540pp.
- Boddicker, M. L. 1980. Trapping Rocky Mountain furbearers. Colorado Trapper's Assn., Littleton, CO.
- Bodenchuk, M.J., J.R. Mason., and W.C. Pitt. 2002. Economics of predation management in relation to agriculture, wildlife, and human health and safety. Pages 80-90 in L. Clark, editor. *Human Conflicts with Wildlife: Economic Considerations*.
- Clark, W.R., J.J. Hasbrouck, J.M. Kienzler, and T.F. Glueck. 1989. Vital statistics and harvest of an Iowa raccoon population. *J. Wildlife Management* 53:982-990.
- Ellis, D.H. 1981. Responses of raptorial birds to low-level jet aircraft and sonic booms. Results of the 1980-81 joint U.S. Air Force-U.S. Fish and Wildl. Service Study. Institute for Raptor Studies, Oracle, AZ. 59 pp.
- EPA (U.S. Environmental Protection Agency). 2000. How to Evaluate Alternative Cleanup Technologies for Underground Storage Tank Sites: A Guide for Corrective Action Plan Reviewers. Publication obtained from <http://www.epa.gov/cgi-bin/claritgw>
- Fancy, S.G. 1982. Reaction of bison to aerial surveys in interior Alaska. *Can. Field Nat.* 96:91.
- Franklin, W. L., and K. J. Powell. 1994. Guard llamas: a part of integrated sheep protection. Bull. Pm-1527, Coop. Ext. Serv., Iowa State Univ., Ames, IA.
- Fuller, M.R. and J.A. Mosher. 1987. Raptor survey techniques. Pages 37-65 in: B.A. Giron Pendleton, B.A. Millsap, K.W. Cline, and D.M. Bird (eds.) *Raptor management techniques manual*. Natl. Wildl. Fed., Washington, D.C.
- Gilmer, D.S., L.M. Cowardin, R.L. Duval, L.M. Mechlin, C.W. Shaiffer, and V.B. Kuechle. 1981. Procedures for the use of aircraft in wildlife biotelemetry studies. U.S. Fish and Wildl. Serv. Resource Publ. 140. 19pp.
- Green, J. S. and R. A. Woodruff. 1996. Livestock Guarding Dogs: Protecting Sheep from Predators. USDA, APHIS, Agriculture Information Bull. No: 588.
- Krausman, P.R., and J.J. Hervet. 1983. Mountain sheep responses to aerial surveys. *Wildl. Soc. Bull.* 11:372-375.
- Krausman, P.R., B.D. Leopold, and D.L. Scarbrough. 1986. Desert mule deer response to aircraft. *Wildl. Soc. Bull.* 14:68-70.
- Kushlan, J.A. 1979. Effects of helicopter censuses on wading bird colonies. *J. Wildl. Manage.* 43:756-760.
- Lancia, R.A., C.S. Rosenberry, and M.C. Conner. 2000. Population parameters and their estimation. Pages 64-83 in: S. Demarais and P.R. Kruasman (eds.) *Ecology and management of large mammals in North America*. Prentice-Hall, Inc. Upper Saddle River, NJ.
- NASS (National Agricultural Statistics Service). 1999. 1999 Livestock wildlife damage survey results. USDA, NASS, Survey Management Division, Washington D.C. 20250.

North Dakota Agricultural Statistics Service. News releases dated January 31, 2003.

Phillips, R. L., and K. S. Gruver. 1996. Performance of the Paws-I-Trip™ pan tension device on 3 types of traps. *Wildl. Soc. Bull.* 24:119-122.

Pils, C.M., M.A. Martin, and E.L. Lange. 1981. Harvest, age structure, survivorship, and productivity of red foxes in Wisconsin, 1975-78. Wisconsin Dept. of Natural Resources Tech. Bull. 124.

Samuel, M.D. and M.R. Fuller. 1994. Wildlife radiotelemetry. Pages 370-418 in: T.A. Bookhout (ed.) *Research and management techniques for wildlife and habitats*. Fifth Ed. The Wildlife Society. Bethesda, MD.

Slate, D. A., R. Owens, G. Connolly, and G. Simmons. 1992. Decision making for wildlife damage management. *Trans. North Am. Wildl. Nat. Res. Conf.* 57:51-62.

Speich, S.M. 1986. Colonial waterbirds. Pages 387-405 in: Cooperrider, A.Y., R.J. Boyd, and H.R. Stuart (eds.) *Inventory and monitoring of wildlife habitat*. Bureau of Land Management. Denver, CO.

Timm, R. M., and R. H. Schmidt. 1989. Management problems encountered with livestock guarding dogs on the University of California, Hopland Field Station. *Proc. Great Plains Wildl. Damage Control Workshop* 9:54-58

Turkowski, F. J., A. R. Armistead, and S. B. Linhart. 1984. Selectivity and effectiveness of pan tension devices for coyote foothold traps. *J. Wildl. Manage.* 48:700-708.

USDA (U.S. Department of Agriculture), Animal and Plant Health Inspection Service, Animal Damage Control. 1997 revised. *Final Environmental Impact Statement*. USDA, APHIS, ADC Operational Support Staff, 6505 Belcrest RD, Room 820 Federal Bldg, Hyattsville, MD 20782.

USDI (U.S. Department of the Interior)/National Park Service (NPS). 1995. Report of effects of aircraft overflights on the National Park System. USDI-NPS D-1062, July, 1995.

USDI (U.S. Department of Interior), Fish and Wildlife Service. 2000. Final Rule. Endangered and Threatened Wildlife and Plants: Determination of Threatened Status of the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Related Rule. 50 CFR Part 17, March 24, 2000.

USFWS. 1992. Biological Opinion. Animal Damage Control Program U.S. Fish and Wildlife Service, Washington D.C.

White, C.M. and S.K. Sherrod. 1973. Advantages and disadvantages of the use of rotor-winged aircraft in raptor surveys. *Raptor Research* 7:97-104.

White, C.M. and T.L. Thurow. 1985. Reproduction of ferruginous hawks exposed to controlled disturbance. *Condor* 87:14-22.

Wildlife Management Institute. 1995. Llamas a threat to bighorns? *Outdoor News Bulletin*. Vol. 49, No. 9.